

Unit Planning Guide: Grade 6 Unit 2 of 8

Unit Title: Number Sense 5 - 8	Pacing (Duration of Unit): 5 weeks
Grade: 6	Buffer Day(s):

Transfer Goals

Students will be able to independently use their learning to:

- Make sense of problems and persevere in solving them.
- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- Model with mathematics.
- **Use appropriate tools strategically.**
- **Attend to precision.**
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.

Established Goals (2011 MA Curriculum Frameworks Standards Incorporating the Common Core State Standards)

Standards (Priority Standards in bold):

- 6.NS.5 Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.**
- 6.NS.6** Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.
- Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., $-(-3) = 3$, and that 0 is its own opposite.
 - Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.
 - Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.
- 6.NS.7 Understand ordering and absolute value of rational numbers.**
- Interpret statements of inequality as statements about the relative positions of two numbers on a number line diagram. For example, interpret $-3 > -7$ as a statement that -3 is located to the right of -7 on a number line oriented from left to right.**

WIDA for English Language Learners

Standard 1: ELLs **communicate** for **Social** and **Instructional** purposes within the school setting
Standard 3: ELLs **communicate** information, ideas and concepts necessary for academic success in the content area of **Mathematics**

In the lesson planning stage, teachers will need to differentiate lessons for ELLs. In order to accomplish this they will need: 1.) this curriculum map, 2.) a list of their ELLs and their proficiency levels, and 3.) appropriate language function expectations and scaffolds or supports.

<p>b. Write, interpret, and explain statements of order for rational numbers in real-world contexts. <i>For example, write $-3^{\circ}\text{C} > -7^{\circ}\text{C}$ to express the fact that -3°C is warmer than -7°C.</i></p> <p>c. Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. <i>For example, for an account balance of -30 dollars, write $-30 = 30$ to describe the size of the debt in dollars.</i></p> <p>d. Distinguish comparisons of absolute value from statements about order. <i>For example, recognize that an account balance less than -30 dollars represents a debt greater than 30 dollars.</i></p> <p>6.NS.8 Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.</p> <p>(6.G.3 Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.)</p>	
Big Ideas:	Essential Questions:
<ul style="list-style-type: none"> Negative numbers are used to represent quantities that are less than zero such as temperatures, scores in games or sports, and loss of income in business. Absolute value is useful in ordering and graphing positive and negative numbers. Positive and negative numbers are often used to solve problems in everyday life. Rational numbers are points on a number line Numbers in ordered pairs indicate locations in quadrants of the coordinate plane 	<ul style="list-style-type: none"> Why is it useful to know the absolute value of a number? How are positive and negative numbers used?
Acquisition (*Mostly assessed through traditional summative assessments)	

Knowledge: Key basic concepts, facts, and key terms (written in phrases) students should be able to recall independently.

Students will know ...

- A number line represents distance from zero, as well as measurement
- That positive and negative integers describe quantities that have opposite directions or values
- A negative value may have a “larger” number, but is not larger than a positive number or any number to the right of it on a number line.
- Number lines can be written both vertically and horizontally
- A rational number is any real number written as a fraction where the denominator is not 0.
- A rational number can be represented as a point on a number line.
- Zero has different meanings depending on context: 0 can be place a placeholder (102); 0 can mean having nothing (\$0); zero can still have value (temperature)
- The sign of a number will indicate location in quadrants of the coordinate plane
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Vocabulary:

- **Absolute value**
- **Coordinates**
- **Inequality**
- **Integers**
- **Negative numbers**
- **Opposite number**
- **Ordered Pair**

- **Origin**
- **Positive number**
- **Rational number**
- **Sign**
- **x-axis**

- **x-coordinate**
- **y-axis**

- **y-axis**

Skills: The discrete skills and process students should be able to use independently (Bloom’s Level of Learning should be noted in parentheses.)

Students will be skilled at:

- Graphing positive and negative values on a number line and coordinate plane (knowledge)
- Identifying the distance from zero on a number line (as an absolute value) (knowledge)
- Representing an integer, non-integer, and repeating decimal on a number line (knowledge)
- Recognizing opposite integers are the same distance away from zero on opposite sides of the number line (knowledge)

<ul style="list-style-type: none"> • y-coordinate 	<p>Knowledge Questions:</p> <ul style="list-style-type: none"> • When are negative numbers used and why are they important? • What are opposites and how are opposites shown on a number line? • What is the relationship between opposites and zero? • When are negative numbers used and why are they important? • How does the distance of n from 0 compare to the distance of $-n$ from 0?
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